
REMARKS

This is in response to the Office Action mailed September 3, 2003 (Paper No. 10). Claims 2-4 have been amended above. Claims 2-11 are now pending in this application.

Claims 2-3 and 6-10 have been rejected under 35 U.S.C. 102 as being anticipated by Zhou. Claims 4-5 and 11 have been rejected under 35 U.S.C. 103 as being obvious over Zhou in view of Lee. The Applicant respectfully disagrees.

Claim 3 recites that the optical bench has at least a portion of unitary construction comprising an integral optical spot size converter. Zhou does not anticipate the features recited in claim 3.

In Fig. 6, Zhou discloses optical device 620, waveguide coupling 610 and optical fiber 630. Contrary to the Examiner's assertion in the Action, Fig. 6 in Zhou fails to disclose an optical bench, and merely discloses the individual components (optical device 620, waveguide coupling 610 and optical fiber 630) of a system for coupling light between the optical device 620 and fiber 630. None of the components in Fig. 6 are an optical bench. Zhou discloses an optical bench in Fig. 3, the bench supporting an optical fiber end and an optical device (laser diode). The optical bench in Fig. 3 of Zhou however, does not have an integral optical spot size converter as called for in claim 3 (the fiber end being formed into a lens so that more light may be captured by the fiber). In paragraph 31, Zhou further discloses a silicon optical bench (SiOB) on which V-grooves are wet-etched to guide the mounting or placement of photonic components including fibers, lenses and demi-conductor chips. The Examiner

may argue (though not expressly stated in the Action) that it would have been obvious for one skilled in the art to take the individual components disclosed in Fig. 6 (laser 620, coupler 610 and fiber 630) and mount one or more using V-grooves to an SiOB as per paragraph 31. The Applicants disagree, and note that Zhou itself (in paragraph 25 for example) identifies the difficulty of integrating a spot size converter with the optical device due to the large differences in their coefficients of thermal expansion and mechanical stabilities. Nevertheless, even if one or more of the individual components (laser 620, coupler 610 and fiber 630) were to be mounted on the SiOB, this would still be different from the features called for in claim 3. Mounting individual components such as an optical coupler to a SiOB using V-grooves as disclosed in Zhou, results in an assembly of two or more distinct (previously separate) parts. Such an assembly of individual parts is not the same as an optical bench with at least a portion of unitary construction comprising an integral optical spot size converter as called for in claim 3, Zhou does not anticipate the features called for in claim 3. Claims 2-3 and 6-11 are patentable over the cited prior art and should be allowed.

Claim 4 is similar to claim 3 in that it calls for an optical bench having at least a portion of unitary construction comprising an integral optical spot size converter. This is not disclosed or suggested in either Zhou or Lee. As noted before with reference to claim 3, Zhou fails to disclose or suggest an optical bench with a portion of unitary construction comprising an integral optical spot size converter. At most, Zhou discloses individual photonic components that are individually mountable to an optical bench which is very different from what is called for in claim 4. Lee, for its part fails to cure the defect in Zhou.

Lee discloses a stand alone spot size converter. In Lee, there is absolutely no mention of an optical bench with a portion of unitary construction and the spot size converter being integral to the portion of unitary construction as otherwise called for in claim 4. Neither Zhou nor Lee disclose or suggest the features recited in claim 4, and hence the combination of Zhou and Lee cannot provide, features that are not disclosed or suggested in either reference. Claims 4-5 are patentable over the cited prior art and should be allowed.

It is further noted, that the result of the structure called for in the claims (e.g. claims 3-4) is to provide a new solution to the known problems associated with the accurate coupling of light between an optical device and fiber, whilst allowing the device/fiber to be tested independently of the coupling means which facilitates their mutual optical alignment. An optical bench, with integral spot-size converter and alignment means, can be manufactured independently of the device/fiber, and the precise form of spot-size converter and alignment means can be tailored according to the device/fiber specifications.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$110.00 is enclosed for a one month extension of time and additional claim fees. The Commissioner is hereby authorized to charge payment for any fees associated with

this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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12/23/03

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